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the most minute requiring high microscopic power to distinguish their structure.

—Captain Howgate has received a letter via Scotland, from Captain Tyson, who commands the *Florence*, the advance vessel of the American Arctic Expedition. It is dated September 29, and reports Captain Tyson's safe arrival at Niuntilick Harbor, Cumberland Gulf, after a tedious voyage of forty days. He proposes moving to the head of the gulf in a few days, to go into winter quarters, and carry out his instructions in reference to the collection of material. The crew were all in good health and spirits. Messrs. Sherman and Kumlein are reported as doing well in their respective departments.

—We regret to learn that the note on page 749, volume xi, has been regarded by Dr. Brewer as too personal, and construed as an affront. The writer begs us to disclaim for him the slightest intention of reflecting upon Dr. Brewer's veracity and sincerity in his conduct of the sparrow controversy. The bantering sentence seemed to bear its own credentials; but since it has been misconstrued, the writer permits us to substitute the following: "Dr. Thomas M. Brewer, has so long remained in what I consider to be his honest misapprehension of the real bearing of alleged facts, in the face of testimony no less explicit, that it is no longer a question with me whether he will continue to argue as heretofore against such bearing of the testimony.

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PROCEEDINGS OF SCIENTIFIC SOCIETIES.

National Academy of Science.—At the session held in New York, October 23d to 25th, the following papers on subjects relating to natural science were read: On the Development of Flounders, by A. Agassiz. On the Morphology of the Antlers of the Cervidæ, by Theodore Gill. On some new Fossil Fishes from Ohio and Indiana; on the Geological Age of the Western Lignites, by J. S. Newberry. On some Gigantic Dinosaurian Reptiles from the Wealden of the Rocky Mountains; American Cretaceous Birds, by O. C. Marsh. On the Air-Sacs of Locusts, by A. S. Packard, Jr. On the Glycogenic Functions of the Liver, and its relation to Vital Force and Vital Heat, by Joseph Le-Conte. Biographical Memoir of Louis Agassiz. First part, relating to his Life and Work in Europe, by A. Guyot.

Academy of Science, St. Louis, Nov. 5.—Dr. Engelmann presented an additional paper on the curious mode of fertilization of the *Agave shawii.* Dr. Engelmann expatiated upon the process of development of the flower. It opens in the evening, and anthers shed pollen that night, while the stigma is not ready for four or five days to receive the pollen. The rest of the flower withers while the stigma is secreting its liquid.

President Riley read a communication on the life-history of the blister-beetles. After showing that, notwithstanding the importance to commerce and to the pharmacopœa, of the well-known Spanish fly (*Cantharis vesicatoria*), its early life-habits have yet remained a mystery. The same holds true of our American blister-beetles, many of which have the same valuable vesicatory power. The fact that their transformations have hitherto eluded investigation is all the more remarkable that some of the species abound during certain years and are quite injurious to potatoes, tomatoes, beans and other cultivated plants. Prof. Riley has discovered that they prey in the larva state on locust eggs, and he has reared several species from the eggs of that western scourge, the Rocky mountain locust. These blister-beetles are remarkable for passing through many curious changes, which are known as hypermetamorphoses. After illustrating these, Professor Riley gave the following summary:

From the foregoing history of our commoner blister-beetles, it is clear that while they pass through the curious hypermetamorphoses so characteristic of the family, and have many other features in common, yet Epicauta and Macrobasis differ in many important respects from Meloe and Sitaris, the only genera hitherto fully known biologically. To resume what is known of the larval habits of the family, we have:

First, the small, smooth, unarmed, tapering triungulin of the prolific Sitaris, with the thoracic joints subequal, with strong, articulating tarsal claws on the stout-thighed but spineless legs, and, in addition, a caudal spinning apparatus. The mandibles scarcely extend beyond the labrum; the creature seeks the light, and is admirably adapted to adhering to bees but not to burrowing in the ground. The second larva is mellivorous, and the transformations from the coarctate larval stage all take place within the unrent larval skin. We have:

Second, the more spinous and larger triungulin of the still more prolific Meloe, with long caudal setæ, but otherwise closely resembling that of Sitaris in the femoral, tarsal and trophial characters, in the subequal thoracic joints, in the unarmed tibiæ, and in the instinctive love of light and fondness for fastening to bees. The second larva is also mellivorous, but the later transformations take place in the rent and partly shed skins of the second and coarctate larva. We have:

Third, the larger and much more spinous triungulins of the less prolific Epicauta, Macrobasis and Henous, with unequal thoracic joints, powerful mandibles and maxillæ, shortened labrum, slender femora, well-armed tibiæ, slender, spine-like, less perfect tarsal claws—combined with an instinctive love of darkness and tendency to burrow and hide in the ground. The second larva takes the same food as the first, its skin is almost entirely cast from the coarctate larva, while the subsequent changes are independent and entirely free of the shell of this last.

THE IOWA ACADEMY OF SCIENCE, Sep. 26.—Among the papers read were Observations on the structure of the leaves of *Silphium laciniatum*, by President Bessey. The paper embodied the result of microscopic observations on sections of the leaves of the compass plant. As all know, the blade of the leaves of this plant is always in, or nearly in, the plane of the meridian, and the purpose of the investigation was to determine whether this polarity is correlated with any peculiarity of structure. In ordinary leaves the cells making up the green pulp are differently arranged on the two sides of the blade, being packed closely together beneath the upper surface, forming what is called *palisade* tissue. If leaves be turned so as to expose the under surface to the sun, they either twist the leaf stalk and bring the palisade tissue to the light or die. Every leaf makes an effort to keep the proper upper surface, only, exposed The investigation shows that the two surfaces of compass plant leaves are exactly alike as to structure, both in the matter of palisade tissue and arrangement of the veins. Both sides therefore are equally affected by light, and the equal struggle of the two sides to turn toward the sun gives the blade a position about parallel to the meridian.

A second paper by President Bessey was on dimorphism in Lithospermum. This paper was illustrated by diagrams, and pointed out that while there is complete dimorphism in *Lithospermum canescens*, there is only an appearance of dimorphism in *Lithospermum longiflorum*, due entirely to the varying length of the corolla tube. In early summer, the last named plant bears showy flowers, the corollas of which vary in length from one to two inches. The stamens are always about the same distance from the mouth of the corolla, while the stigma borne on a style that is nearly constant in length, is sometimes above and sometimes below them. In place of dimorphism there is simply extreme and inconstant variation.

Later in the season this plant produces only minute flowers that are not more than a tenth of an inch in length. These later flowers are always self-fertilized.

Professor Todd read a paper on the distribution of forests in South-western Iowa, with considerations regarding the origin of prairies. The writer presented facts showing that the position of prairie and forest is not altogether determined by fires, the fineness of the soil, nor even the distribution of rain, but rather by the constancy of moisture in the air and soil. For example in South-western Iowa , over areas that are essentially identical as regards soil and precipitation, the north slopes are constantly timbered, while the southward-facing slopes are bare.

BOSTON SOCIETY OF NATURAL HISTORY, NOV. 21.—Mr. S. W.

Garman read a paper on some features of erosion in the temperate zones. Dec. 5.—Mr. S. H. Scudder made a communication on certain interesting articulates from the Carboniferous rocks of Illinois, and Professor A. Hyatt remarked on the evolution of the races of *Planorbis multiformis.*

NEW YORK ACADEMY OF SCIENCES, Nov. 19.—Professor J. S. St. John read a paper on the application of dry plate photography in preparing, without a camera, glass transparencies of sections of fossils for projection (with lantern illustrations). Professor T. Egleston spoke of some remarkable forms of amethysts from Brazil; and Mr. A. A. Julien remarked on the chemical and microscopical characters of certain American rocks.

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SCIENTIFIC SERIALS.[1]

QUARTERLY JOURNAL OF MICROSCOPICAL SCIENCE.—October. Loxosoma, by Carl Vogt. Abstracted and annotated by the Rev. J. Hincks. On the minute structural Relations of the Red Blood Corpuscles, by A. Boettcher. Notes on the Embryology and Classification of the Animal Kingdom: comprising a Revision of Speculations relative to the Origin and Significance of the Germ-layers, by E. R. Lankester.

THE GEOLOGICAL MAGAZINE.—November. American Surface Geology, and its relations to British: with some Remarks on Glacial Conditions in Britain and "The Great Ice Age" of Mr. James Geikie (Part i.), by S. V. Wood. Across Europe and Asia, Part vi. Tornsk to Irkutsk, by J. Milne.

ANNALS AND MAGAZINE OF NATURAL HISTORY. — November. On a Carboniferous Hyalonema and other Sponges from Ayrshire, by Prof. and Mr. J. Young.

ANNALES DES SCIENCES NATURELLES.—October 15. Recherches pour servir à l'Histoire de la Respiration chez les Poissons, par M. Jobert. Recherches pour servir a l'Histoire du Bâtonnet optique chez les Crustacés et les Vers, par J. Chatin.

THE GEOGRAPHICAL MAGAZINE.—November. Quetta and the Afghans, by H. G. Raverty. The Island of Perim.

CANADIAN ENTOMOLOGIST.—November. Pieris vernalis a variety of Pieris protodice, by T. E. Bean. An account of some farther experiments upon the effect of cold in changing the Form of certain Butterflies, by W. H. Edwards.

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[1] The articles enumerated under this head are usually selected.